Philips Consumer Electronics

CCD colour camera
VCM7250/00T-VC72505T

The VCM7250/00T is the PAL version,
the VC72505T is the NTSC version of this camera

USER MANUAL

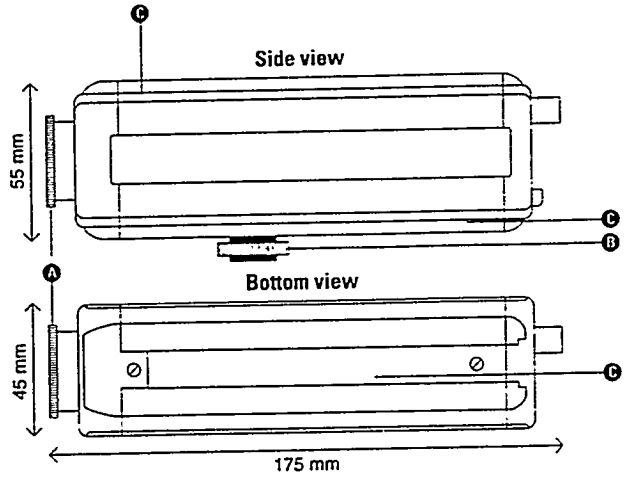
PHILIPS

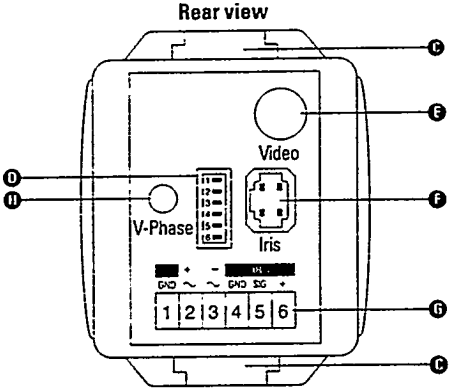
Bescheinigung des Herstellers/Importeurs

Hiermit wird bescheinigt, daß die Video Kamera typ VCM7250/00T in Übereinstimmung mit den Bestimmungen der AmtsblVfrg 10446/1984 funk-entstört ist.

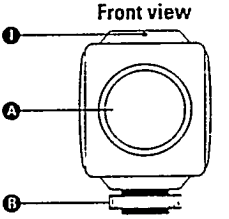
Der Deutschen Bundespost wurde das inverkehrbringen dieses Gerätes angezeigt und die Berechtigung zur Überprüfung der Serie auf Enthaltung der Bestimmungen eingeräumt.

Philips Novatronics
Eindhoven, Nederland


Side view
55 mm
Bottom view
45 mm
175 mm


Rear view
Video
V-Phase
Iris
GND
SG
1 2 3 4 5 6

1


Front view

FOR VC72505T ONLY

This device complies with part 15 of the FCC rules.
Operation is subject to the following two conditions:

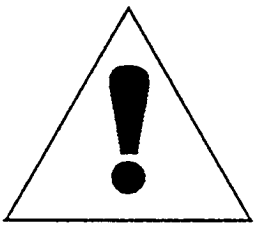
1. this device may not cause harmful interference, and

2. this device must accept any interference received, including interference that may cause undesired operation.

WARNING:

To prevent fire or shock hazard, do not expose this camera to rain or moisture.

Do not attempt to disassemble the camera . In order to prevent shock and fire hazard, do not remove screws or covers. There are no user-serviceable parts inside.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

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This camera set comprises the following components:

- One CCD colour camera.
- One mounting socket unit (1/4" Whitworth thread).
- Two cable clamps.
- The manual you are now reading.

The illustrations referred to in this manual are printed on the fold out page of the front and back cover

Introduction

Please read these instructions carefully before trying to put this camera into operation.
The illustrations referred to in the text are printed on the fold out flaps of the front and back cover of the booklet.

This video camera incorporates a highly sensitive solid state image sensor (CCD). In conjunction with an appropriate power supply unit and a lens, it will produce fully interlaced colour video images, according to the PAL/NTSC standard.

Mounting the camera

The camera features two accessory rails *(fig. 1-C)*, one on the top and the other at the bottom of the camera housing. The mounting socket unit fits both rails and can be fixed in any position.

Mounting accessories

Video camera accessories, such as video lights, a microphone etc., can be installed on both accessory rails (*fig. 1-C*). These rails will accept all accessory shoes adhering to standard JIS B7101-1975. The cable clamps which are enclosed, also fit into the accessory rails.

Connecting the camera

Power supply
This camera must be powered with a separate, galvanically insulated, AC or DC power supply unit.
- The AC input should be 24 V AC (+15% / -50%).

- The DC input voltage may vary from 10.8 to 39 V DC.

The power supply is connected via a screw block on the rear of the camera *(fig. 1 - G)*. Connect the power leads to the connectors **2** and **3**. For DC supply **2** is + and **3** is -. *
An extra safety ground connection (**1**) is provided to connect the camera to ground potential. The maximum voltage between the supply inputs **2** and **3** and the safety ground must be less than 50 Volt.
The camera itself is galvanically insulated, which makes a system with more than one camera unsusceptible to ground loop problems.

* Use class 2 type of wiring for theVC72505T
For the VCM7250/00T you should use a power supply that meets the requirements for SELV service, according to DIN/VDE 0860/05.89 or EN 60742 only.

Video output
The camera produces a standard CVBS video signal via the BNC output connector on the rear of the camera *(fig. 1-E)*. A 75 Ohm coaxial cable, type RG-059, is recommended to connect the camera to the monitor or system you are using.

Auto-iris lenses
The camera features two types of auto-iris drives:

- **Passive auto-iris lenses.**
  These lenses, provided with a special 4-pole plug, are connected directly to the 4-pole socket *(fig 1 - F)* on the rear of the camera.
- **Standard auto-iris lenses.**
  These lenses use a video signal as input for the automatic iris control. The wires of this type of auto-iris lens must be connected to the three iris poles of the wire connector *(fig. 1 - G)* on the rear of the camera.

Make sure that the wires of the lens do not get mixed up during the installation.

For further connection details consult the documentation provided with the auto-iris lens.

Synchronisation

The camera can be used in a single camera set-up or as a component of a larger system.

Used singly, the camera generates video images superimposed on a synchronisation signal that corresponds with the PAL or the NTSC standard.

Used in a larger system with several video cameras sharing the same video recording equipment, the recording will be unsynchronised for a short period of time, after switching from one camera to another. On the monitor this shows in the form of a scrolling image. This scrolling effect can be avoided by using the 'linelock' feature, locking the camera signal to the local line frequency. This is done by connecting the camera to a 24 V AC (+15%/- 50%) 50 Hz power supply for PAL or 60 Hz when it concerns NTSC and by switching vertical lock on *(put switch SW6 in its righthand position).*

The Phase potentiometer *(fig 1 - H)* allows a phase adjustment of this linelock over 200°.
If the V-phase adjustment range is not satisfactory, please switch the power leads 2 and 3 *(fig. 1-G).*

Setting the shutter speed

The shutter speed is set with the DIP-switches on the rear of the camera *(fig. 1-D).*

For the proper DIP switch settings see next page ...

SHUTTER SPEED	SW1	SW2	SW3
1/50 / 1/60 *	L	L	L
1/125	R	L	L
1/250	L	R	L
1/500	R	R	L
1/1000	L	L	R
1/2000	R	L	R
1/4000	L	R	R
1/10000	R	R	R

R = Right
L = Left

* 1/60 for the NTSC version, 1/50 for the PAL version

White balance

The camera features an automatic, TTL *(= Through The Lens)* white balance system. It means that the colour temperature setting is automatically adjusted, according to the colour temperature of the light entering through the lens. Your camera has three settings: Auto, Indoor and Outdoor.

The auto-mode
The automatic white balance control covers the complete range, from incandescent lamps (2700K) to sunlight (5600K).

The indoor-mode
In this mode the automatic adjustment is limited to the lower colour temperatures between 2700 K and 3300 K, covering light sources such as incandescent and halogen lamps.

The outdoor-mode
In this mode the camera will only make adjustments within the higher colour temperature range of 5000 K to 5600 K, corresponding with sunlight conditions.

Selecting the required mode
Basically, the **auto** setting would cover all lighting environments. When the camera is used exclusively for either indoor our outdoor applications (without

artificial light), you will obtain a more accurate white balance control by selecting the approriate alternative.

The three modes are selected with the DIP switches SW4 and SW5 on the rear of the camera *(fig 1-D)*

SW4	SW5	MODE
L	L	AUTO
L	R	OUTDOOR
R	L/R	INDOOR

R = Right
L = Left

About lenses

The camera is equipped with a standard CS lens mount. All lenses that meet this standard can be mounted directly onto the camera.

Although manual iris lenses can be used, auto-iris lenses are recommended to cover the entire illumination range. The required circuitry is incorporated in the camera.

C-mount lenses can be used with a special C/CS adapter.

The choice of the most suitable lens depends on two important factors:

- The minimum illumination level of the area to be monitored.
- The required field of view.

In the table below you will find guidelines concerning the required light sensitivity (aperture) of the lens, which obviously depends on the level of illumination of the scene that has to be monitored.

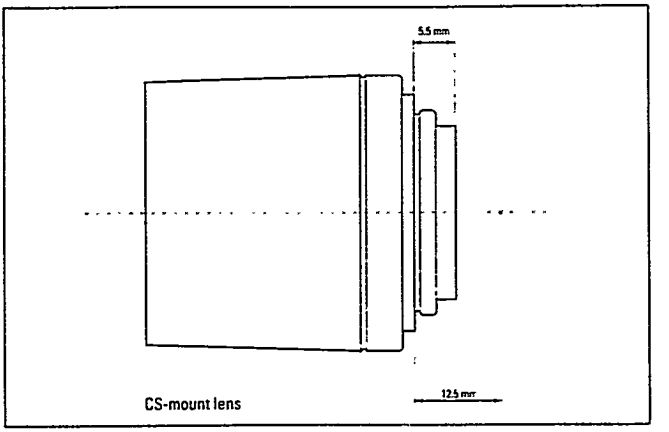
Aperture (F)	Illumination (Lux)	
	Nominal	Minimum
0.95	55	2.5
1.2	88	3.3
1.4	120	5.0
1.6	156	6.5
1.8	198	8.0
2.0	240	10
2.8	480	20

Nominal illumination: 700 mV video (0 dB AGC + γ)
(+300 mV sync).
Minimum illumination: 350 mV video.

The field of view is basically determined by the focal length of the lens and should cover the dimensions of the scene or object you are monitoring.

The diagram shown in fig. 2 will help you to make the proper choice. The 'Object distance' and 'Object width' in this diagram can be divided by ten for situations where the distance camera to object is smaller than those given in the diagram.

The protruding part of the lens should not exceed 5.5 mm, measured from the flange of the CS mount



Mounting the lens

1. Remove the protection cover of the CS-mount *(fig. 1-A)*.
2. Screw the lens into the CS-mount.
3. When using an auto-iris lens, the lens cable should be connected to the iris connector on the back of the camera *(see 'Connecting the camera')*

When you use a C-mount lens, you should use a C/CS mount adapter.

Focus adjustment

For an optimal picture sharpness the CS-mount adjustment ring on the front of the camera has been pre-adjusted in the factory to the standard CS-mount back focal distance. Re-adjustment of this back focal distance may, however, be necessary when:

- The back focal distance for a particular lens differs slightly from the specified value.
- A C/CS-mount adapter is used.

1. Set the lens distance to infinity.
2. Aim the camera at an object which is at least 15 metres (45 feet) away.
3. Make a preliminary iris adjustment if necessary *(see: ' Iris adjustment')*.
4. Loosen the lens mount ring by means of the small set screw on top of the front *(fig. 1 - I)*.
5. Turn the lens with the CS-mount adjustment ring until the video picture is in focus. This adjustment is most accurate when the iris is fully open. A neutral density filter can be used to reduce the scene brightness.

6. Tighten the lens mount ring by means of the set screw *(fig. 1- I)*.

Iris adjustment

Manual iris lenses:

1. Install the camera in the position where it will be used. Aim and focus the camera on the object/area that will be monitored.
2. Set the iris to its minimum aperture. The camera will now show a low contrast picture with 'noise'.
3. Open the iris slowly. The picture contrast will improve and the 'noise' will gradually disappear.
4. Set the iris to the position at which the details in the larger white parts of the picture are not washed out.

Auto-iris CCTV lenses:
(Also consult the documentation of the auto-iris lens)

Auto-iris lenses are usually pre-adjusted for an acceptable image under average conditions. Re-adjustment may be necessary to obtain the optimum picture quality.

1. Aim the camera at a grey scale test chart.
2. Set the 'ALC' variable resistor on the lens to its average position.
3. Connect an oscilloscope to the iris control output, pin 5 *(fig. 1 - G)*. Adjust the setting of the 'Level' variable resistor until the maximum signal from the scene (peak white) reads 1 Volt on the oscilloscope.

Note:
If you have no suitable test chart, aim the camera at the scene you want monitored and proceed as described above.

When the image on the monitor shows an extremely high or low contrast, you will obtain a more acceptable picture quality when you perform the following steps:

- **Extremely high contrast**
  Slowly turn the 'ALC' variable resistor to **Peak** and the 'Level' variable resistor to **Low.**
- **Extremely low contrast**
  Slowly turn the 'ALC' variable resistor to **Average** and the 'Level' variable resistor to **High.**

Passive auto-iris lenses:
These lenses need no iris adjustment.

Cleaning the sensor filter

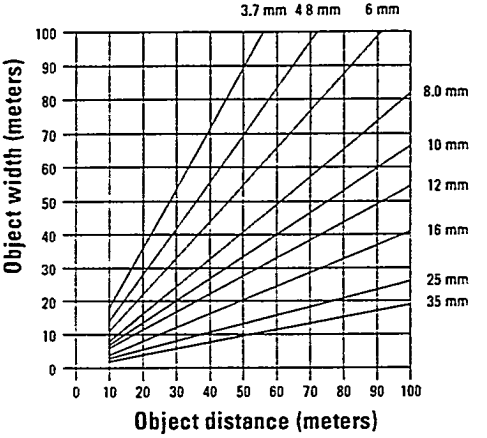
Avoid unnecessary exposure of the sensor filter to dust. Remove any dust particles by blowing with clean air. If the surface of the fiflter is contaminated, wipe it clean with a lint free cotton or linnen cloth, while constantly breathing on the surface. **Never** use any kind of cleaning fluid.

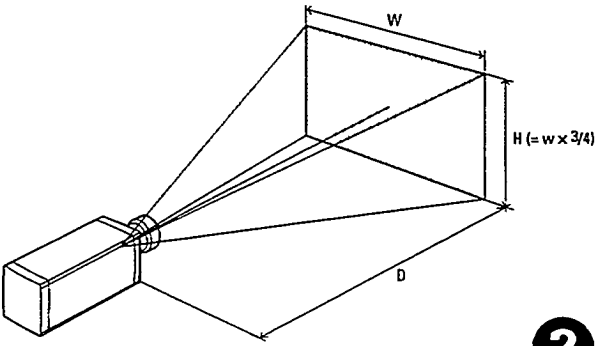
Technical specifications

Pick-up device	1/2" CCD
Horizontal resolution	330 TV lines
TV system	PAL: 625 lines, interlaced NTSC: 525 lines, interlaced
Synchronisation	Internally synchronised, possibility to synchronise to local line frequency (line-lock) Phase adjustment range is 200°
Output signal	Standard CVBS signal 1 V_{pp} composite video into 75 Ω
Light sensitivity 50 ire/-6dB	5 Lux *(scene, F 1.4 lens)*
Lens mount	CS mount
Auto-iris drive:	
Regular auto-iris lenses	1 V_{pp} video into 10 KΩ
Philips auto-iris lens	Special interface
Tripod mounting unit	Standard 1/4" B.S.W.
White balance	Switch selectable: auto TTL indoor TTL outdoor TTL
Shutter speed	Switch selectable, 8 positions from 1/50 (PAL) or 1/60 (NTSC) to 1/10000
Input voltage	12-28 V AC and 10.8-39 V DC, using same connection terminals

Connections	6-position screw-block: 3 positions for power supply, including separate safety ground connection 3 positions for regular auto-iris lens Dedicated 4-pole socket for Philips auto-iris lens BNC connector for video signal
Power consumption	Less than 5 VA (excl. auto-iris)
Ambient temperature:	
Operating	-10° to +55° C
In storage	-25° to +70° C
Ambient humidity:	
Operating	20% to 95% RH
In storage	Up to 99% RH
Dimensions (DxWxH)	175 x 45 x 55 mm (excl. lens)
Weight	390 grs. (excl. lens)

The weight and dimensions are approximate.
The specifications are subject to change without notice.





Dimensions of the scene

2

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